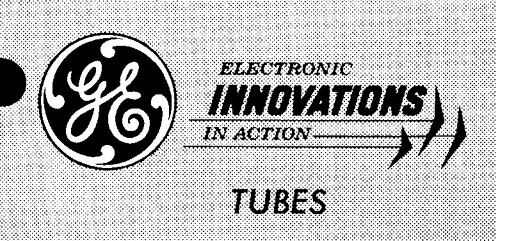


—PRODUCT INFORMATION—

Beam Pentode

6550-A

FOR AF POWER-AMPLIFIER APPLICATIONS

- AUDIO POWER OUTPUT
- UP TO 100 WATTS OUTPUT - 2 TUBES IN PUSH-PULL
- 42 WATTS PLATE DISSIPATION

The 6550-A is a beam-power pentode primarily designed for use in audio-frequency power-amplifier applications. It carries a 42 watt plate dissipation rating which provides for push-pull amplifier designs up to 100 watts output.

The 6550-A features a straight sided T-14 envelope and may be used as a direct replacement for the 6550.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC★	6.3±0.6	Volts
Heater Current●	1.6	Amperes
Direct Interelectrode Capacitances▲		
Grid-Number 1 to Plate: (g1 to p)	0.8	pf
Input: g1 to (h+k+g2+b.p.)	15	pf
Output: p to (h+k+g2+b.p.)	10	pf

MECHANICAL

Mounting Position - Any

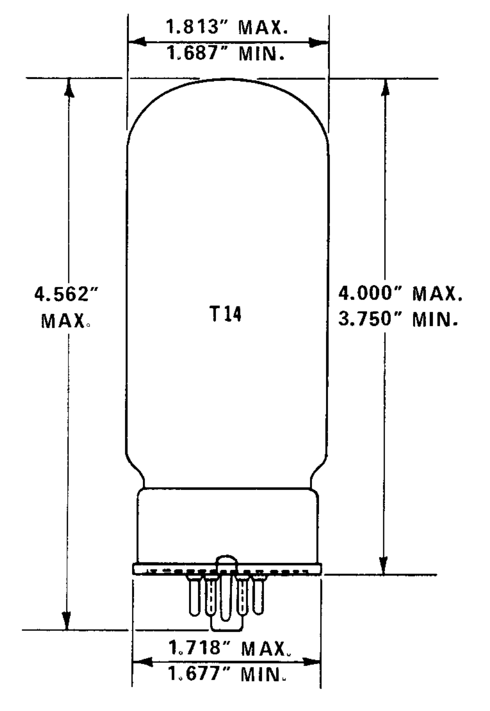
Envelope - T-14, Glass

Base - B7-99, Large-Wafer Octal with Sleeve Low Loss 7-Pin Micanol

Outline Drawing - EIA 14-16

Maximum Diameter	1.813	Inches
Minimum Bulb Diameter	1.687	Inches
Maximum Over-all Length	4.562	Inches
Maximum Seated Height	4.000	Inches
Minimum Seated Height	3.750	Inches

PHYSICAL DIMENSIONS

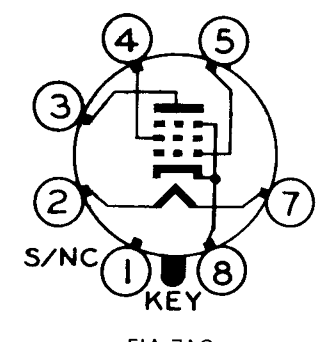


EIA 14-16

TERMINAL CONNECTIONS

Pin 1 - No Connection or Base Shell
Pin 2 - Heater
Pin 3 - Plate
Pin 4 - Grid-Number 2 (Screen)
Pin 5 - Grid-Number 1
Pin 7 - Heater
Pin 8 - Cathode and Beam Plates

BASING DIAGRAM



EIA 7AC

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

	Pentode Connection	Triode Connection ♦	
DC Plate Voltage	660	500	Volts
DC Screen Voltage	440§	---	Volts
Positive DC Grid-Number 1 Voltage	0	0	Volts
Negative DC Grid-Number 1 Voltage	300	300	Volts
Plate Dissipation	42	42	Watts
Screen Dissipation (Average)	6.0	---	Watts
Screen Dissipation (Peak)	10	---	Watts
DC Cathode Current	190	190	Milliamperes
Heater-Cathode Voltage			
Heater Positive with Respect to Cathode			
DC Component	100	100	Volts
Total DC and Peak	200	200	Volts
Heater Negative with Respect to Cathode			
Total DC and Peak	300	300	Volts
Grid-Number 1 Circuit Resistance			
With Fixed Bias	0.05	0.05	Megohms
With Cathode Bias	0.25	0.25	Megohms
Bulb Temperature at Hottest Point ⊕	250	250	°C

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS, PENTODE CONNECTION

Plate Voltage	250	Volts
Screen Voltage	250	Volts
Grid-Number 1 Voltage	−14	Volts
Plate Current	140	Milliamperes
Screen Current	12	Milliamperes
Transconductance	11,000	Micromhos
Plate Resistance, approximate	15,000	Ohms
Triode Amplification Factor	8	
Grid-Number 1 Voltage		
Ib = 1.0 Milliamperes	−40	Volts

CLASS A_1 AUDIO-AMPLIFIER, SINGLE TUBE

DC Plate Voltage	250	400	Volts
DC Screen Voltage	250	225	Volts
DC Grid-Number 1 Voltage	−14	−16.5	Volts
Peak AF Grid-Number 1 Voltage	14	16.5	Volts
Zero-Signal DC Plate Current	140	87	Milliamperes
Maximum-Signal DC Plate Current	150	105	Milliamperes
Zero-Signal DC Screen Current	12	4.0	Milliamperes
Maximum-Signal DC Screen Current	22	14	Milliamperes
Load Resistance	1,500	3,000	Ohms
Total Harmonic Distortion	7	13.5	Percent
Maximum-Signal Power Output	12.5	20	Watts

CHARACTERISTICS AND TYPICAL OPERATION (Cont'd)

PUSH-PULL CLASS AB_1 AMPLIFIER, VALUES FOR TWO TUBES, PENTODE CONNECTION

	Cathode Bias	Fixed Bias			
DC Plate Voltage	400	400	450	600	Volts
DC Screen Voltage	310	270	310	300	Volts
DC Grid-Number 1 Voltage	---	−23	−29.5	−32.5	Volts
Cathode-Bias Resistor	140	---	---	---	Ohms
Peak AF Grid-to-Grid Voltage	43	46	58	65	Volts
Zero-Signal DC Plate Current	170	170	150	100	Milliamperes
Maximum-Signal DC Plate Current	185	275	295	270	Milliamperes
Zero-Signal DC Screen Current	10	9.0	9.0	5.0	Milliamperes
Maximum-Signal DC Screen Current	25	35	38	33	Milliamperes
Effective Load Resistance, Plate-to-Plate	5,000	3,500	3,500	5,000	Ohms
Total Harmonic Distortion	0.7	0.6	1.5	3.0	Percent
Maximum-Signal Power Output	40	60	77	100	Watts

PUSH-PULL AUDIO-AMPLIFIER—ULTRA-LINEAR OPERATION, VALUES FOR TWO TUBES

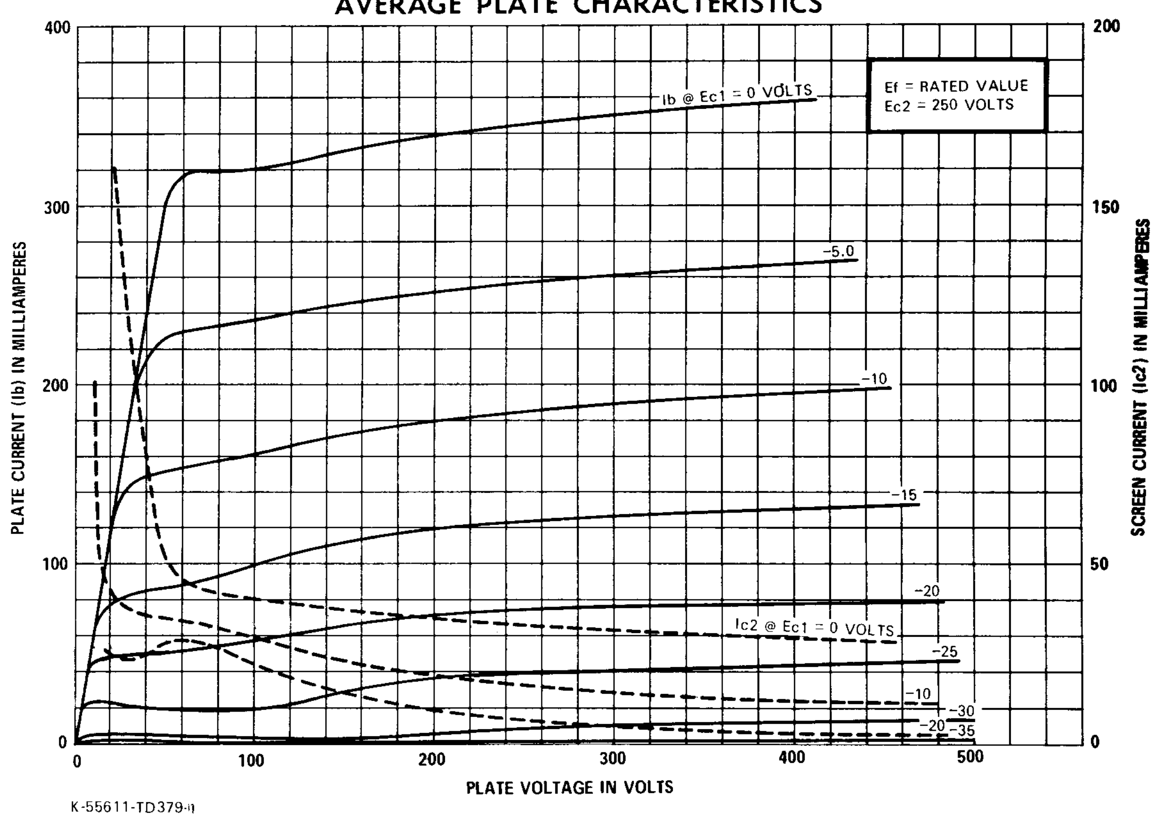
SCREEN TAPPED AT 40% OF PRIMARY TURNS

	Cathode Bias Class A1	Fixed Bias Class AB1	
DC Plate Voltage	395	450	Volts
DC Screen Voltage	395	450	Volts
DC Grid-Number 1 Voltage	---	−48	Volts
Cathode-Bias Resistor	200	---	Ohms
Peak AF Grid-to-Grid Voltage	70	96	Volts
Zero-Signal DC Plate Current	170	150	Milliamperes
Maximum-Signal DC Plate Current	174	265	Milliamperes
Zero-Signal DC Screen Current	12.5	12	Milliamperes
Maximum-Signal DC Screen Current	23	38	Milliamperes
Effective Load Resistance, Plate-to-Plate	5,600	4,000	Ohms
Total Harmonic Distortion	1.5	2.4	Percent
Maximum-Signal Power Output	34	70	Watts

NOTES

- ★ The equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance.
- ● Heater current of a bogey tube at Ef = 6.3 volts.
- ▲ Without external shield.
- ♦ With screen connected to plate.
- § The maximum screen voltage rating is 450 volts in push-pull circuits where the screen of each tube is connected to a tap on the plate winding of the output transformer.
- ⊕ Measured with an infrared thermometer, Ircon Model 700 BC or equivalent, at an ambient temperature of 40° C.





K-55611-TD379-1

AVERAGE PLATE CHARACTERISTICS

Ef = RATED VALUE
Ec2 = 300 VOLTS

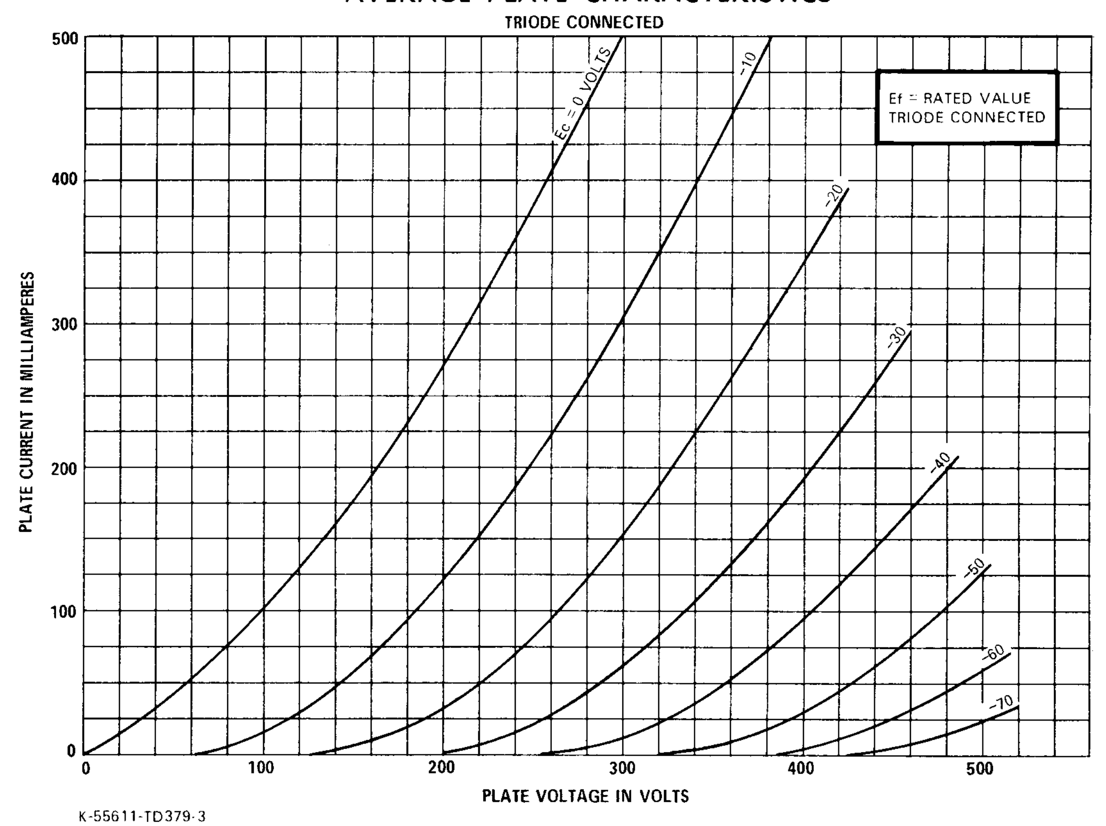
Ib @ Ec1 = 0 VOLTS
−5.0
−10
−15
−20
−25
−30
−35
−40
Ic2 @ Ec1 = 0 VOLTS
−10
−20

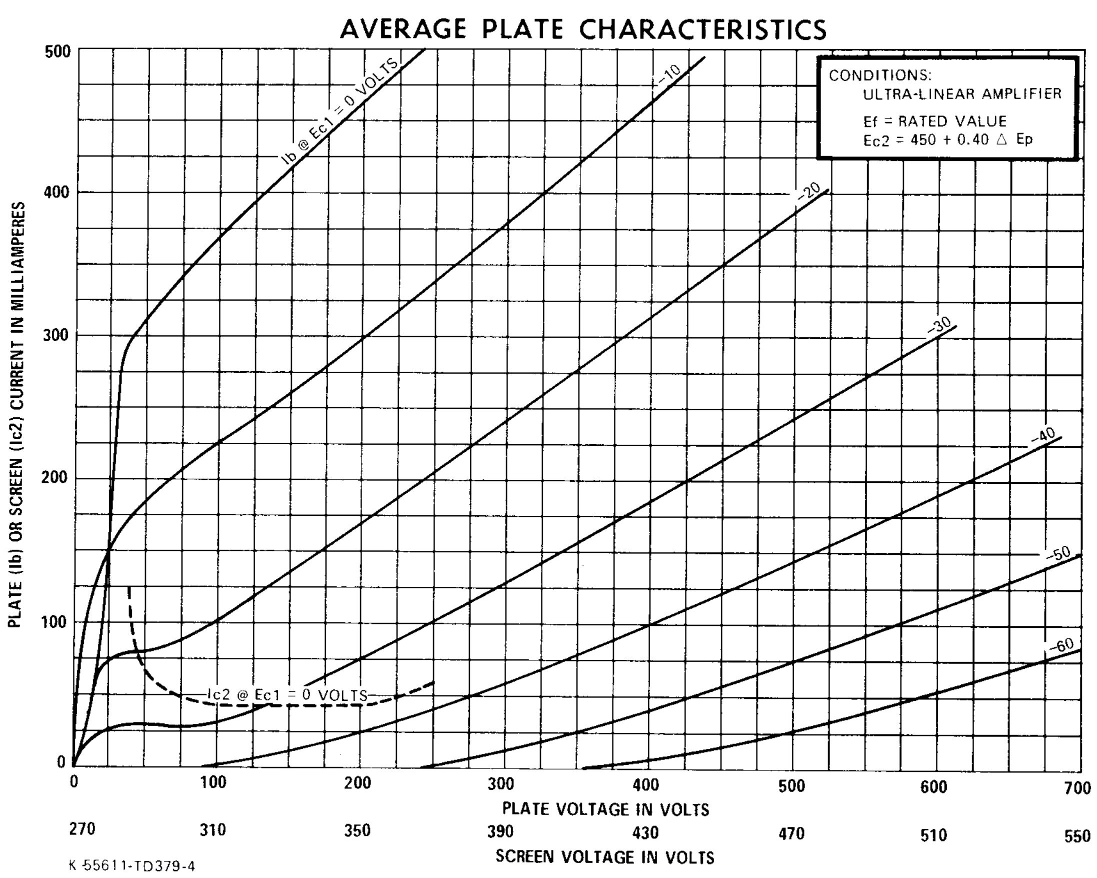
PLATE CURRENT (Ib) IN MILLIAMPERES: 0, 100, 200, 300, 400, 500

SCREEN CURRENT (Ic2) IN MILLIAMPERES: 0, 50, 100, 150, 200

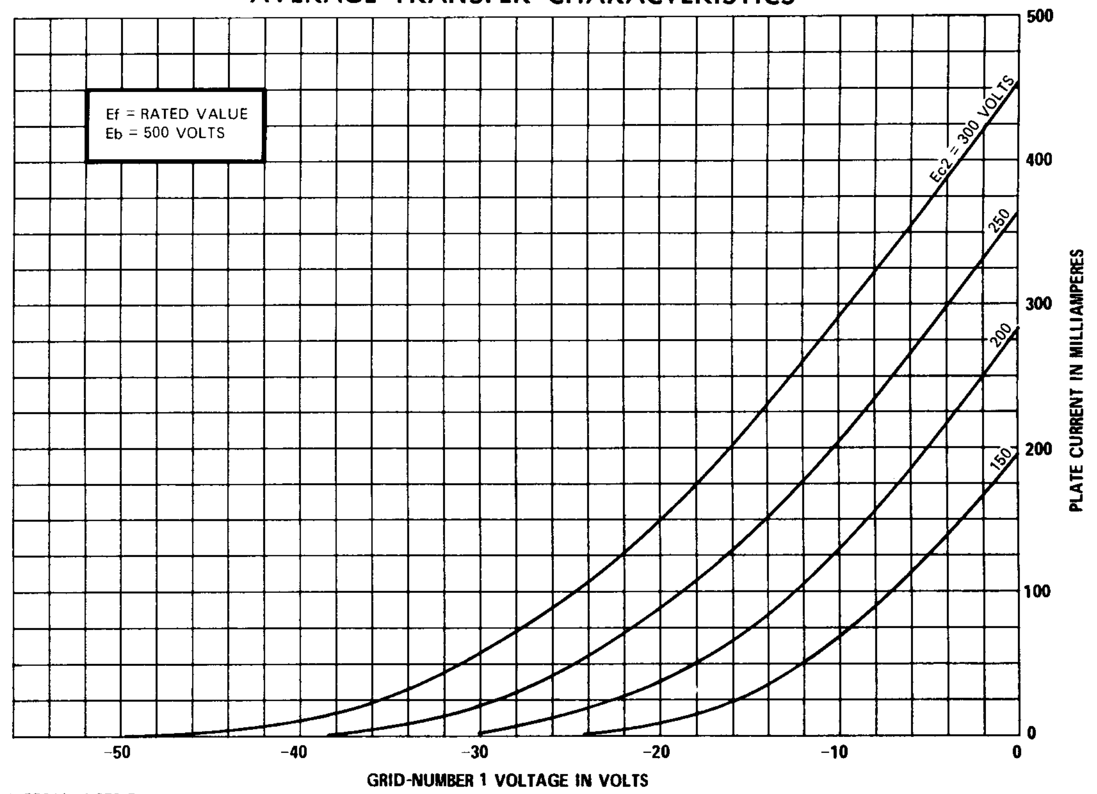
PLATE VOLTAGE IN VOLTS: 0, 100, 200, 300, 400, 500

K-55611-TD379-2


AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTED
Ef = RATED VALUE
TRIODE CONNECTED
Ec = 0 VOLTS
-10
-20
-30
-40
-50
-60
-70
PLATE CURRENT IN MILLIAMPERES
PLATE VOLTAGE IN VOLTS
0
100
200
300
400
500
K-55611-TD379-3


AVERAGE PLATE CHARACTERISTICS
CONDITIONS:
ULTRA-LINEAR AMPLIFIER
Ef = RATED VALUE
Ec2 = 450 + 0.40 △ Ep
Ib @ Ec1 = 0 VOLTS
Ic2 @ Ec1 = 0 VOLTS
-10
-20
-30
-40
-50
-60
PLATE (Ib) OR SCREEN (Ic2) CURRENT IN MILLIAMPERES
PLATE VOLTAGE IN VOLTS
0
100
200
300
400
500
600
700
270
310
350
390
430
470
510
550
SCREEN VOLTAGE IN VOLTS
K-55611-TD379-4





K-55611-TD379-5

OPERATION CHARACTERISTICS

PUSH-PULL CLASS AB1
Ef = RATED VALUE
Eb = 450 VOLTS
Ec2 = 310 VOLTS
Ec1 = −29.5 VOLTS
RL = 3500 OHMS

Ib
Ic2
Esig
TOTAL HARMONIC DISTORTION

TOTAL HARMONIC DISTORTION IN PERCENT: 0, 1, 2, 3, 4, 5, 6, 7
PEAK GRID-TO-GRID SIGNAL (Esig) IN VOLTS: 0, 20, 40, 60, 80, 100, 120, 140
PLATE CURRENT (Ib) IN MILLIAMPERES: 0, 50, 100, 150, 200, 250, 300, 350
SCREEN CURRENT (Ic2) IN MILLIAMPERES: 0, 10, 20, 30, 40, 50, 60, 70

0, 25, 50, 75, 100
POWER OUTPUT IN WATTS

K-55611-TD379-6

OPERATION CHARACTERISTICS

PUSH-PULL CLASS AB1
ULTRA-LINEAR

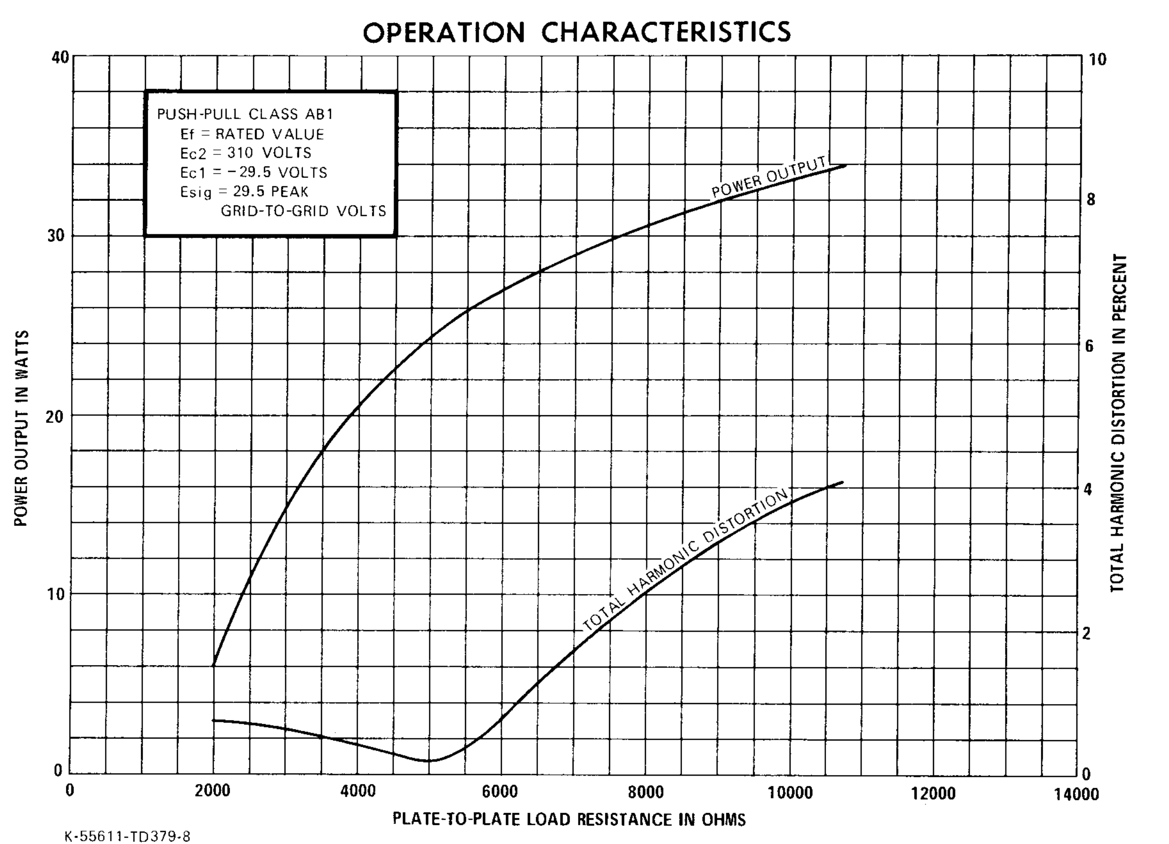
Ef = RATED VALUE
Eb = 450 VOLTS
Ec2 = 450 VOLTS
Ec1 = −48 VOLTS
RL = 4000 OHMS

Ib
Esig
Ic2
TOTAL HARMONIC DISTORTION

TOTAL HARMONIC DISTORTION IN PERCENT
PEAK GRID-TO-GRID SIGNAL (Esig) IN VOLTS
PLATE CURRENT (Ib) IN MILLIAMPERES
SCREEN CURRENT (Ic2) IN MILLIAMPERES
POWER OUTPUT IN WATTS

K-55611-TD379-7

OPERATION CHARACTERISTICS



K-55611-TD379-8

OPERATION CHARACTERISTICS

PUSH-PULL CLASS AB1
ULTRA-LINEAR

Ef = RATED VALUE
Eb = Ec2 = 450 VOLTS
Ec1 = −48 VOLTS
Esig = 48 VOLTS PEAK GRID-TO-GRID VOLTS

POWER OUTPUT
TOTAL HARMONIC DISTORTION

POWER OUTPUT IN WATTS: 0, 10, 20, 30, 40
TOTAL HARMONIC DISTORTION IN PERCENT: 0, 2, 4, 6, 8, 10
PLATE-TO-PLATE LOAD RESISTANCE IN OHMS: 0, 2000, 4000, 6000, 8000, 10000, 12000, 14000

K-55611-TD379-9



TUBE PRODUCTS DEPARTMENT
OWENSBORO, KENTUCKY 42301